AMENDMENTS TO THE CLAIMS

Claims 1 to 10 (Cancelled)

11. (Previously Presented) A method of controlling an automated clutch of a vehicle, comprising the step of adapting a characteristic curve of the clutch through an electronic clutch management system, wherein the adaptation is performed under at least one suitable set of operating conditions, said suitable set of operating conditions being represented by at least one suitable operating point, wherein the adaptation of the characteristic curve is based on at least one input variable, the at least one input variable comprises at least one of an engine rpm-rate (n_{engine}), an effective engine torque (M_{engine}), and a clutch actuator position (X_{clutch}), wherein at least one delay block (T) is used for the adaptation of said characteristic curve, and wherein said delay block serves to compensate for a time offset due to differences in the speed of detection and transmission of different input variables.

12. (Canceled)

13. (Canceled)

14. (Previously Presented) A method of controlling an automated clutch of a vehicle, comprising the step of adapting a characteristic curve of the clutch through an electronic clutch management system, wherein the adaptation is performed under at least one suitable set of operating conditions, said suitable set of operating conditions being represented by at least one

suitable operating point, wherein an adaptation algorithm is used for the adaptation of said characteristic curve, and wherein the adaptation algorithm performs adaptations of signals and parameters depending on the current operating point of the vehicle, wherein the adaptation algorithm employs at least one correction term, wherein the at least one correction term comprises a correction for the rotary acceleration ($d\omega_{\_engine}/dt$) of the engine which serves to avoid a divergence between the model values and the actual values.

15. (Previously Presented) A method of controlling an automated clutch of a vehicle, comprising the step of adapting a characteristic curve of the clutch through an electronic clutch management system, wherein the adaptation is performed under at least one suitable set of operating conditions, said suitable set of operating conditions being represented by at least one suitable operating point, wherein an adaptation algorithm is used for the adaptation of said characteristic curve, and wherein the adaptation algorithm performs adaptations of signals and parameters depending on the current operating point of the vehicle, wherein the adaptation algorithm employs at least one correction term, wherein the at least one correction term comprises an engine torque correction value (ΔM_{engine}), which serves to take signal errors of the engine torque (M_{engine}) into account.

16. (Previously Presented) The method of claim 14, wherein the at least one correction term comprises a correction value (Δ_{TuP}) for the clutch actuator displacement.

17. (Previously Presented) The method of claim 14, wherein the at least one correction term comprises a characteristic curve parameter (CC parameter) which serves to adapt the friction coefficient of the automated clutch.

18. (Original) The method of claim 17, wherein the CC parameter comprises a vector quantity.

19. (Previously Presented) The method of claim 14, wherein a parameter identification is used in the design of the adaptation algorithm.

20. (Canceled)

21. (Canceled)

22. (Canceled)

23. (Canceled)

24. (Previously Presented) The method of claim 25, wherein the first adaptation comprises adapting at least the friction coefficient through the steps of:

evaluating a dynamic equilibrium of the clutch and thereby determining a deviation between the torques acting on the clutch, and

adjusting the friction coefficient in accordance with said deviation.

25. (Previously Presented) A method of controlling an automated clutch of a vehicle, comprising the step of adapting a characteristic curve of the clutch through an electronic clutch management system, wherein the adaptation is performed under at least one suitable set of operating conditions, said suitable set of operating conditions being represented by at least one suitable operating point, wherein in the adaptation of the characteristic curve, a second adaptation is superimposed on a first adaptation, wherein the second adaptation comprises evaluating at least the shape of the characteristic curve.

26. (Previously presented) The method of claim 25, wherein evaluating said curve shape comprises

evaluating the torque deviations at predetermined operating points of the characteristic curve,

from the values of the torque deviations, determining an actual state of said curve shape,

establishing a correction curve for the currently effective friction coefficient, and

applying the correction curve to correct the deviations the actual characteristic curve and a nominal characteristic curve.

27. (Canceled)

28. (Canceled)

29. (Previously Presented) A method of controlling an automated clutch of a vehicle, comprising the step of adapting a characteristic curve of the clutch through an electronic clutch management system, wherein the adaptation is performed under at least one suitable set of operating conditions, said suitable set of operating conditions being represented by at least one suitable operating point;
wherein the adaptation of the characteristic curve comprises:

during a slip phase of the clutch, computing a clutch torque based on an engine torque and on a rotary acceleration of the engine, and

comparing the computed clutch torque to a stored characteristic curve; and wherein a torque equilibrium at the automated clutch is represented by the equation:

$J_{engine} * d\omega_{\_engine}/dt = M_{engine} - M_{clutch}$,

wherein $J_{engine\ stands}$ for a moment of inertia of the engine, $d\omega_{\_engine}/dt$ stands for a rotary acceleration of the engine, M_{engine} stands for the engine torque, and M_{clutch} stands for the clutch torque, wherein a clutch torque to be used in controlling the clutch and a torque error are calculated through the equation:

$M_{clutch,control} = M_{clutch} + \Delta M_{clutch}$

$\Delta M = M_{clutch,control} - (M_{engine} - J_{engine} * d\omega_{\_engine}/dt)$

wherein $M_{clutch,control}$ stands for the clutch torque value used by the control unit and ΔM represents the torque error.

30. (Original) The method of claim 29, wherein the stored characteristic curve is corrected by the torque error.

31. (Original) The method of claim 30, wherein correcting the characteristic curve comprises adjusting a set of values representing the characteristic curve, said set of values comprising at least one of a friction coefficient and a point of incipient frictional engagement of the clutch.

32. (Previously Presented) The method of claim 29, wherein the friction coefficient is lowered if the torque error is positive, and the friction coefficient is increased if the torque error is negative.

33. (Original) The method of claim 30, wherein the stored characteristic curve is described by stored curve parameters and the characteristic curve is corrected by adapting at least one of the stored curve parameters.

34. (Original) The method of claim 33, wherein said adaptation of the at least one of the stored curve parameters is performed incrementally.

35. (Canceled)

36. (Previously Presented) A method of controlling an automated clutch of a vehicle, comprising the step of adapting a characteristic curve of the clutch through an electronic clutch management system, wherein the adaptation is performed under at least one suitable set of operating conditions, said suitable set of operating conditions being represented by at least one suitable operating point; wherein the adaptation of the characteristic curve comprises:

during a slip phase of the clutch, computing a clutch torque based on an engine torque and on a rotary acceleration of the engine, and

comparing the computed clutch torque to a stored characteristic curve; and wherein an integrating method is used in the adaptation of the characteristic curve, wherein the integrating method comprises integration of torque signals to determine a model engine rpm-rate through the equation:

$$\omega_{\_engine,model} = \frac{1}{J_{engine}} \int (M_{clutch,control} - M_{engine}) \, dt$$

wherein $\omega_{\_engine,model}$ = model engine rpm-rate.

37. (Original) The method of claim 36, wherein the adaptation comprises the steps of comparing the model engine rpm-rate and the actual engine rpm-rate, and altering the characteristic curve based on deviations detected in said comparison.

38. (Original) The method of claim 37, wherein altering the characteristic curve comprises altering at least one descriptive quantity of the characteristic curve, said characteristic quantities comprising at least one of the friction coefficient and the point of incipient frictional engagement.

39. (Original) The method of claim 38, wherein the step of altering the characteristic curve is performed incrementally in order to avoid an unstable feedback condition.

40. (Original) The method of claim 38, wherein the friction coefficient is adapted in a plurality of adaptation steps for predetermined constraint points of a friction characteristic.

41. (Original) The method of claim 40, wherein said predetermined constraint points are located in a range of high clutch torque values.

42. (Original) The method of claim 41, wherein the friction coefficient is further adapted by an additional step of transferring the adaptation that was made for the predetermined constraint points in the range of high torque values to other constraint points within a time period that includes the time during and after a full load cycle.

43. (Previously Presented) The method of claim 15, wherein the at least one correction term comprises a correction value (Δ_{TuP}) for the clutch actuator displacement.

44. (Previously Presented) The method of claim 15, wherein the at least one correction term comprises a characteristic curve parameter (CC parameter) which serves to adapt the friction coefficient of the automated clutch.

45. (Previously Presented) The method of claim 44, wherein the CC parameter comprises a vector quantity.

46. (Previously Presented) The method of claim 15, wherein a parameter identification is used in the design of the adaptation algorithm.